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# The genus *Calodera* Mannerheim in Canada (Insecta, Coleoptera, Staphylinidae, Aleocharinae)

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## Abstract

The Holarctic genus *Calodera* Mannerheim, 1830 is reported from Canada for the first time. Two species are identified. One of them is probably undescribed; the other, *C. parviceps* (Casey, 1893), is redescribed and illustrated. A key to the North American representatives of the genus is provided.

**Keywords**

Staphylinidae, Aleocharinae, *Calodera*, taxonomy, biogeography, ecology, diagnosis, first record, Canada

## Introduction

The distribution of the oxypodine genus *Calodera* Mannerheim, 1830 appears to be confined to the northern and temperate parts of the Holarctic region. The generic placement of species described and recorded from other zoogeographic regions and currently attributed to *Calodera* is probably incorrect. So far, all the revised species from these regions have proved to refer to other genera (Assing 2003a). At present, nineteen species are known from the Holarctic region, sixteen of them from the Palaearctic (including a species of uncertain status) and three from the Nearctic region. While the Palaearctic representatives have been revised recently (Assing 1996, 2003a, 2003b, 2004), the North American species have never been studied comprehensively. Up until a few years ago, only one Nearctic species had been attributed to *Calodera*, *C. infuscata* Blatchley, 1910 from Indiana. Recently, two additional species were transferred to the genus from *Amarochara* Thomson, 1858, *C. parviceps* (Casey, 1893) from Rhode Island and *C. caseyi* Assing, 2002 – a replacement name for the secondary homonym *C. humilis* (Casey, 1893) – from Pennsylvania (Assing 2002). *Calodera* species were previously unknown from Canada (Gouix and Klimaszewski 2007).

Almost all the *Calodera* species are rare and local. They generally inhabit moist habitats such as swamps, moist leaf litter near water (rivers, streams, lakes, etc.), and floodplain forests. At least the Palaearctic species are mostly collected in early spring. Occasionally, several species may occur syntopically. In Germany, for example, as many as six species have been recorded in the same locality (Assing 1996).

Identification of *Calodera* species is generally difficult. Within most species groups a reliable determination is possible only based on the internal structures of the aedeagus. External characters and the spermatheca are subject to considerable intraspecific and, at the same time, little interspecific variation (Assing 1996).

On the occasion of a recent visit to Laurentian Forestry Centre in Québec, Jan Klimaszewski drew my attention to Oxypodini specimens on loan from the Canadian National Collection of Insects, Arachnids, and Nematodes, Ottawa. This material also included specimens of *Calodera*, the first records of the genus from Canada.

## Material and methods

The material referred to in this study is deposited in the following collections:

**CNC** Canadian National Collection of Insects, Arachnids, and Nematodes, Agriculture and Agri-Food Canada, Ottawa, Canada

**cAss** private collection V. Assing, Hannover, Germany

The morphological studies were carried out using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). For the photographs a digital camera (Nikon Coolpix 995) was used.

Head length was measured from the anterior margin of the frons to the posterior margin of the head; elytral length at suture from the apex of the scutellum to the posterior margin of the elytra.

The map was generated using the online generic mapping tool (GMT) of the Geomar website at www.aquarius.ifm-geomar.de/omc.

## Results

### *Calodera parviceps* (Casey, 1893)

*Nasirema parviceps* Casey, 1893: 309.
*Amarochara parviceps*; as synonym of *A. umbrosa*: Bernhauer and Scheerpeltz (1926).
*Calodera parviceps*: Assing (2002).

**Type material examined.** See Assing (2002)

**Additional material examined. Canada: New Brunswick:** 1 ex., Kouchibouguac National Park, 5.VII.1977, leg. Vockeroth (CNC); 1 ex., same data, but 18.VI.1977 (CNC); 1 ex., same data, but 30.VI.1977 (CNC); 1 ex., same data, but 26.VI.1977 (CNC); 1 ex., same data, but 18.IX.1977, leg. Campbell (CNC); 9 exs., same data, but 15.IX.1977, leg. Campbell, Miller, Smetana (CNC, cAss); 1 ex., same data, but 21.IX.1977, leg. Smetana (CNC). **Ontario:** 1♀, Carp, 20.X.1954, leg. Becker (CNC); 1♀, Lanark Co., Mississippi Lake, 22.X.1967, leg. Smetana (CNC); 2♀♀, 22 mi. N Hurkett, Black Sturgeon Lake, 26.VI.1973, leg. Parry & Campbell (CNC); 1♀, Montreal River Harbour, 7.VI.1973, leg. Campbell & Parry (CNC); 12 ♀♀, Ottawa, Shirleys Bay, 2.V.1979, leg. Smetana (CNC, cAss); 2♀♀, Leeds & Greenv. Co., 2 km SE Spencerville, 30.IV.1979, leg. Smetana (CNC, cAss). **Nova Scotia:** 2 exs., Cape Breton Highlands N. P., Warren Lake trail, 12 m, alder litter and moss, 26.IX.1984, leg. Campbell & Davies (CNC); 1 ex., Cape Breton Highlands N. P., near Benjies Lake, 17.VI.1984, leg. Smetana (cAss).

**Redescription.** In external characters (Fig. 1) such as size, habitus, punctation, microsculpture resembling the European *C. rufescens* Kraatz, 1856. Body length 2.8-3.5 mm. Coloration highly variable: head blackish-brown to black; pronotum and elytra rufous to black; abdomen uniformly blackish or bicoloured with segments III-V and apex reddish to brown; legs and antennae reddish to blackish, usually with the basal 2-3 antennomeres somewhat paler.

Head approximately as long as wide, with a posterior constriction of about 0.6 times the width of head (Fig. 2); eyes approximately as long as postocular region in dorsal view; punctation fine and of variable density; integument with or without shallow microsculpture; antenna as in Fig. 3.

Pronotum approximately as wide as long and approximately 1.15 times as wide as head (Fig. 2); punctation fine and dense, but density subject to pronounced variation; dorsal surface with or without shallow microsculpture.

Elytra approximately 1.4 times as wide as pronotum and at suture slightly shorter than pronotum, with or without microsculpture (Fig. 2); punctation finer than that of pronotum. Hind wings fully developed.

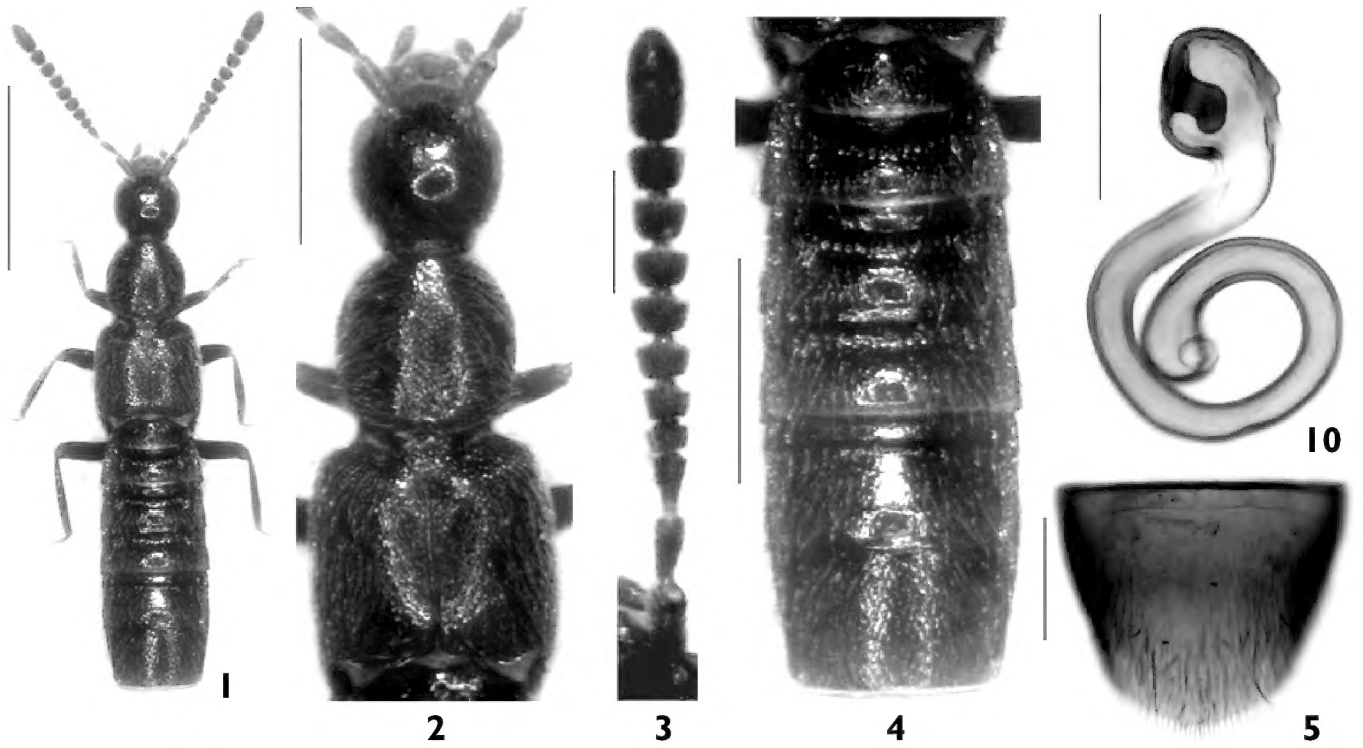
Abdomen approximately as wide as elytra; tergites III-VI with pronounced and coarsely punctate anterior impression; remainder of tergal surfaces with fine and dense punctation (Fig. 4); integument with or without microsculpture.

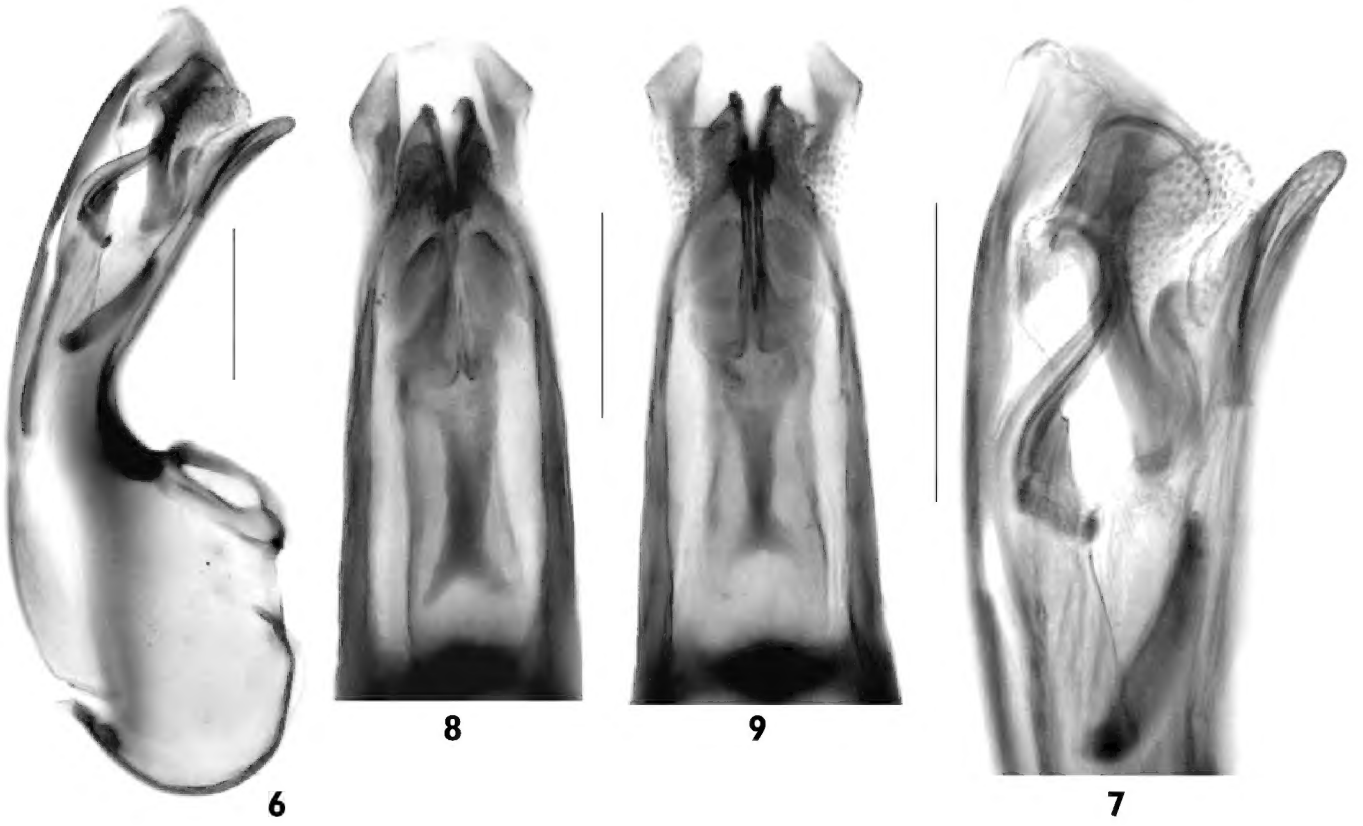
Male: sternite VIII with posterior margin obtusely angled in the middle (Fig. 5); median lobe of aedeagus as in Figs 6-9.

Female: sternite VIII weakly convex posteriorly; spermatheca as in Fig. 10.

**Intraspecific variation.** Like *C. rufescens*, *C. parviceps* is subject to pronounced intraspecific variability, especially of coloration, microsculpture, and punctation.

**Comparative notes.** *Calodera parviceps* is distinguished from *C. rufescens* by the shape of the apical internal structures of the aedeagus, which are somewhat spoon-shaped and apically crossed in *C. rufescens*. For illustrations of the genitalia of *C. rufescens* see Assing (1996). For characters separating *C. parviceps* from other North American representatives of the genus see the key below.

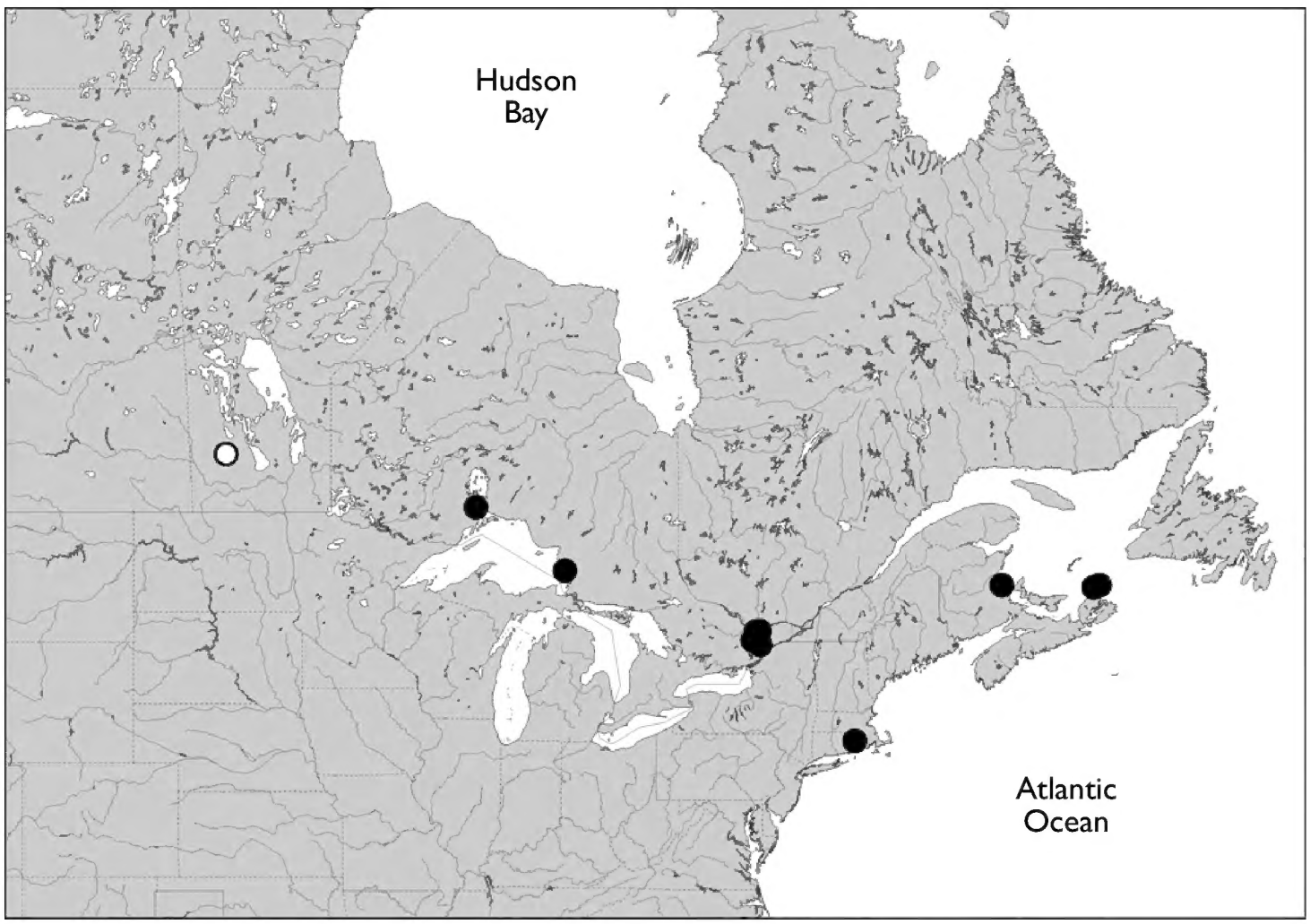



**Figs 1-10.** *Calodera parviceps*. 1: habitus; 2: forebody; 3: antenna; 4: abdominal segments III-VII; 5: male sternite VIII; 6: median lobe of aedeagus in lateral view; 7: apical part of median lobe of aedeagus in lateral view; 8-9: apical part of median lobe of aedeagus in ventral view; 10: spermatheca. Scales: 1: 1.0 mm; 2, 4: 0.5 mm; 3, 5: 0.2 mm; 6-10: 0.1 mm.

**Comment.** Unfortunately, the single syntype in the Casey collection is a female (Assing 2002). Therefore, the identification of the additional material listed above, which is based on external characters, must be regarded as somewhat tentative. Males from Rhode Island would be required to verify the specific identity of the Canadian material.

**Distribution and bionomics.** At present, the species is known from several localities in eastern Canada and from Rhode Island (Map 1). As can be inferred from the labels attached to the above specimens and from the ecological preferences of closely related congeners, *C. parviceps* is probably an inhabitant of the litter layer of moist




**Map 1.** Distribution of *Calodera parviceps* (filled circles) and *Calodera* sp. (open circle) in eastern North America.

habitats. The examined specimens were collected during the period from April through July, with the majority of records in June, and in autumn (September, October),

### *Calodera* sp.

**Material examined. Canada: Manitoba:** 2♀♀, Riding Mountain National Park, 6 km E Clear Lake, litter of mixed forest, 3.VII.1979, leg. Lyons (CNC, cAss).

**Comment.** In external morphology, this probably undescribed species is similar to *C. parviceps*, but is distinguished by somewhat shorter antennae with more transverse antennomeres IV-X. Since only two females are available, however, a description of this species would be premature and inadequate.

## Key to the Nearctic species of *Calodera*

Repeated requests for a loan of the type material of *C. infuscata*, which is deposited in the Purdue Entomological Research Collections (Lafayette, Indiana), have remained unanswered, so that the diagnosis of this species relies exclusively on the (few) details specified in the original description. The possibility that *C. infuscata* and *C. caseyi* are, in fact, conspecific cannot be ruled out.

1. Small species; body length < 2.3 mm ..... 2
– Larger species; body length > 2.7 mm ..... 3
2. Head without posterior constriction. Known distribution confined to Pennsylvania (USA) ..... *C. caseyi* Assing
– Presence of posterior constriction of head unknown. Recorded only from Indiana (USA) ..... *C. infuscata* Blatchley
3. Antennae longer; antennomeres VI-X approximately 1.5 times as wide as long (Fig. 3). Median lobe of aedeagus as in Figs 6-9. Eastern Canada and northeastern USA (Rhode Island) (Map 1) ..... *C. parviceps* (Casey)
– Antennae shorter; antennomeres VI-X approximately twice as wide as long. Manitoba (Canada) (Map 1) ..... *Calodera* sp.

## Acknowledgements

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